U.S. Department
of Transportation
**Research and
Special Programs
Administration**

400 Seventh St., S.W.
Washington, D.C. 20590

JUN 10 2003

Mr. Gary Hawkins
American Cylinder Testing, Incorporated
32570 Genoa Road
Genoa, II 60135

Ref No. 02-0119

Dear Mr. Hawkins:

This responds to your letter dated January 9, 2002 concerning clarification of the requirements for the refurbishment of DOT specification aluminum cylinders. In your letter, you stated that numerous companies are performing aluminum cylinder refurbishment on medical oxygen cylinders. Your specific questions are paraphrased and answered below.

Q1. What is acceptable in the refurbishment process?

A1. At this time, the Hazardous Materials Regulations (HMR; 49 CFR Parts 171 - 180) do not directly address requirements for the refurbishing process. We recognize that there are potentially serious issues surrounding refurbishing of aluminum cylinders; therefore, we are considering a possible future rulemaking to address these concerns. In the interim, we recommend that a person follow Section 3.4.1 of the Compressed Gas Association Pamphlet C-6.1, which states "Paint stripping should be performed only with products recommended for aluminum. Do not use solutions of strong alkali (caustic), acid, or heat sources, such as furnaces or blow torches." We also recommend that any work performed on the cylinder during the refurbishing process (sanding, shot blasting, brushing, etc.) be in accordance with the recommendations of the cylinder manufacturer.

Q2. If a cylinder is sanded to remove the outer coating, what is the acceptable amount of wall thickness that can be removed?

A2. Any method which may reduce the metal thickness to an extent that the cylinder no longer meets the DOT 3AL specification design should not be used. Persons performing exterior cleaning or outer coating removal should follow the cylinder manufacturer's recommendations to avoid causing loss of wall thickness.

Q3. If a cylinder is manufactured to the minimum allowable wall thickness, can you remove any sidewall without being in violation of the DOT specification?

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A3. If the cylinder wall thickness has been reduced to below the minimum allowable value prescribed in the applicable specification, the cylinder is in non-compliance with the HMR.

Q4. Do these cylinders need to be given an ultrasonic test to determine wall thickness before and after refurbishment? If so, must the ultrasonic test be by the hand held method or fully automated? Must ultrasonic test records be kept?

A4. As I stated, the HMR does not address cylinder refurbishment and currently there is no requirement to perform an ultrasonic test to measure wall thickness. However, if a cylinder is refurbished in connection with its requalification, the hydrostatic test must be performed after the internal or external cleaning is performed (CGA Pamphlet C-6.1, section 3.4.3). The hydrostatic test would detect gross wall thinning. Also, the person is urged to perform ultrasonic test to ensure that the cylinder still meets the minimum wall thickness requirements.

Q5. Is a hydrostatic pressure test required each time a cylinder is refurbished?

A5. Same response as A4. There is no requirement to hydrostatic pressure test refurbished cylinders.

Q6. Is there or should there be a way to identify the number of times a cylinder has been refurbished?

A6. We will consider this matter in a possible future rulemaking.

Sincerely,

Hattie L. Mitchell

Hattie Mitchell
Chief, Regulatory Review and Reinvention
Office of Hazardous Materials Standards

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cylinders
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January 9, 2002

Ms. Cheryl Freeman
US Department Of Transportation
Office of Hazardous Materials Technology
DHM - 20
RSPA
400 7th Street SW
Washington, DC 20590-0001

Dear Cheryl:

This letter is in reference to our conversation in regards to aluminum cylinder refinishing or refurbishment. Currently there are numerous companies who are currently doing or planning on doing what they are calling cylinder refurbishment. This is mostly on aluminum 3AL medical cylinders. Some methods that I am aware of are blasting, sanding, or grinding of the outer clear coat finish that is applied on all medical aluminum cylinders.

The concern that I have and need DOT clarification on is what is and is not acceptable in the refurbishment process. For example, if a cylinder is sanded to remove the outer clear coat it is impossible to not remove a portion of the outer sidewall. Is there an acceptable amount that can be removed? If a cylinder is manufactured to the minimum allowable wall thickness, can you remove any sidewall without being in violation of DOT specification? Do these cylinders before and after refurbishment need to be Ultrasonically tested to determine wall thickness and loss of? Does this need to be a hand held UT measurement of certain places on the cylinder, or a full Ultrasonic measurement of the entire cylinder? Are these measurements if acceptable, required by DOT to be kept with Hydrostatic test records? Is a hydrostatic test required each time a cylinder is refurbished? Is there or should there be a way to identify the number of times a cylinder may have been refurbished, special markings, etc.?

I have had numerous conversations with other hydrostatic test companies and cylinder manufacturers including Luxfer and Catalina Cylinder. Each of these companies and its officials express a degree of concern when people are altering the cylinder by removing the OEM clear coat and potentially removing wall thickness. It is a potential major liability for the manufacturers as well as the company who may have hydrostatically tested this cylinder last.

Knowing there are over 25 million aluminum medical cylinders in use today in the United States today, I see this as a great potential problem over the next 10 to 15 years. Specifically, because until some type of regulation, rule, clarification is enacted the number of potential problems (cylinders) that are being refurbished or refinished continues to grow.

American Cylinder Testing, Hampshire, IL requests that DOT take this subject under advisement and study the potential issues and make a recommendation. We would be very happy to discuss this and any other issues related to Aluminum cylinder refurbishment in detail. Thank you for addressing this issue in an expeditious manner.

Sincerely,

Gary Hawkins
American Cylinder Testing
Hampshire, IL

CC: Jim Rosenbaum-American Cylinder Testing, Inc.
Orland McCarthy-American Cylinder Testing, Inc
Kevin Boehne-DOT – Chicago, IL